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A NEW SPONGE SPECIES, *CERATOPSION CRUSTOSUM* (DEMOSPONGIAE: RASPAILIIDAE), FROM DEEP WATERS OF THE GULF OF MEXICO

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Abstract.—A new sponge, *Ceratopsion crustosum* from deep waters (70–159 m) of the Gulf of Mexico is described. It is the first record of a *Ceratopsion* from the Gulf, or indeed from Atlantic waters. The new species is a typical species of Raspailiidae with an axial, extra-axial, and ectosomal skeleton, and with all the diagnostic characters of *Ceratopsion* Strand, 1928, except for the occurrence of trichodragmata. The definition of *Ceratopsion* is expanded to include species having these microscleres.

During a 5-year survey by the Mineral Management Service (United States Department of the Interior), off southwest Florida in the Gulf of Mexico, a large number of sponges were collected and deposited at the National Museum of Natural History, Smithsonian Institution. The Axinellidae is one of the best represented families in this collection in terms of number of species and number of specimens of each species. The presence of several undescribed species, and the high intraspecific morphological variation that has not been described previously, provided the incentive for a regional revision of the Axinellidae (in preparation). Amongst the material selected for this revision, a new species of *Ceratopsion* Strand, 1928 was found, dredged between 70 and 159 m depth. This genus, formerly in the Axinellidae, is now placed in the Raspailiidae, Order Poecilosclerida (Hooper 1991).

Specimens were preserved in alcohol. Spicule slides and both thick and polished sections were prepared using the methods described by Rützler (1978). Abbreviations used in the text are: USNM, National Museum of Natural History, Smithsonian Institution (formerly United States National Museum), ZMA, Zoological Museum of Amsterdam.

Family Raspailiidae Hentschel, 1923
Genus *Ceratopsion* Strand, 1928
Ceratopsion crustosum, new species
Fig. 1

Material examined.—Holotype: USNM 42808, alcohol, 76 m, off Florida Keys, 24°47′25″N, 83°51′09″W, coll. 25 April 1981. Paratypes: USNM 42809 (alcohol), ZMA 10070, ZMA 10071 [alcohol, 76 m, off Florida Keys, 24°47′25″N, 83°51′09″W, coll. 25 Apr 1981].

Additional material.—USNM 41577, alcohol, 70 m, Southwest Florida, off Cape Sable, 25°16′53″N, 83°37′47″W, coll. 17 Nov 1980; USNM 42807, alcohol, 70 m, Southwest Florida, off Cape Sable, 25°16′53″N, 83°37′47″W, coll. 8 Feb 1982; USNM 42810, alcohol, 159 m, Southwest Florida, off Naples, 25°44′50″N, 84°21′02″W, coll. 7 Feb 1982.

Description.—Shape: One or more thin laminae on short peduncle, coalescing at some points, or folded, forming calycles (cups), with margins forked, undulating or uneven (Fig. 1a).

Surface: Hispid from projecting long spicules.

Consistency: Firm.

Skeleton (Fig. 1b, c): Ectosomal, extra-

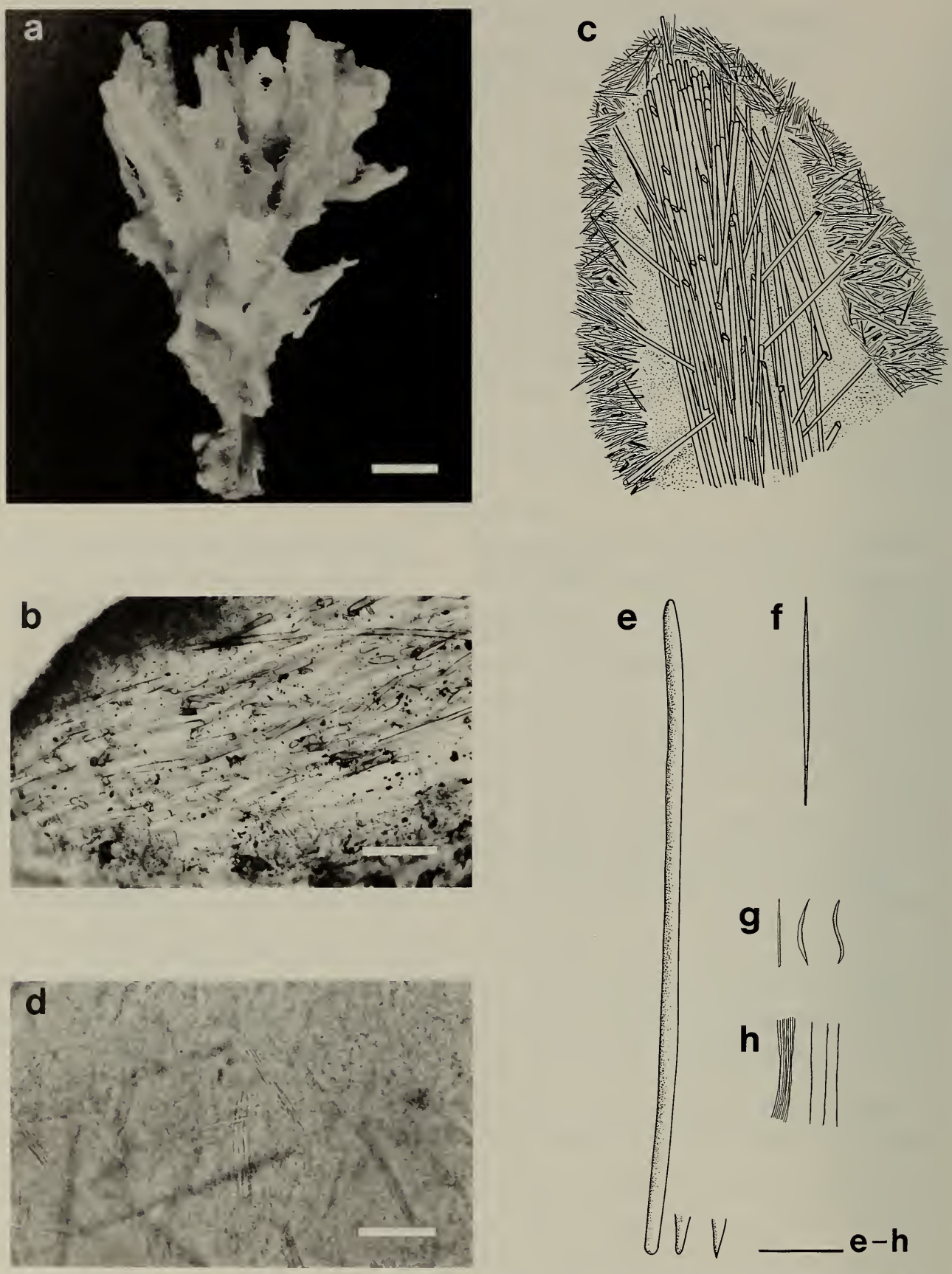

Fig. 1. *Ceratopsion crustosum,* new species. a, Holotype, USNM 42808; b, micrograph of longitudinal section of the skeleton; c, schematic drawing of a longitudinal section of the skeleton; d, micrographs of trichodragmata in the ectosome; e, choanosomal strongyles and modifications; f–g, ectosomal oxeas, h, ectosomal trichodragmata and raphides. Scales: a, 1 cm, b, 200 μm, c, not to scale, d, 67 μm, e–h, 100 μm.

axial and axial skeleton differentiated. Ectosomal skeleton formed by continuous and compact dermal crust or palisade (100–350 μm) of oxeas, raphides and trichodragmata, that are generally scattered or sometimes arranged in sparse bundles, 100 μm thick approximately, oriented perpendicularly to surface; in places with round apertures of 80–100 μm diameter. Extra-axial skeleton generally obscured by leaf-shape habit of sponge; with single and sparse styloids, mostly broken, protruding from choanosome to surface through ectosome and areas with aspiculous sheets of spongin. Choanosomal skeleton axially condensed, compressed in cross section, with large strongyles and styloids oriented longitudinally in relation to axis.

Choanocyte chambers: Circular to oval (35–48 μm).

Spicules (Fig. 1d–h; Table 1): Strongyles, typical or modified to styles and styloids (670–1300 μm in length), some sinuous. Two size categories of oxeas (150–330 μm and 40–100 μm in length); smaller ones bent at center or s-shaped. Raphides, some arranged as trichodragamata (17.5–250 μm in length).

Discussion.—The newly described species shares characters typical of both *Thrinacophora* Ridley & Dendy, 1886 and *Ceratopsion* Strand, 1928. These genera, which have historically been placed within the Axinellidae, are considered by Hooper (1991) to belong to the Raspailiidae. Both genera according to Hooper are very similar in many characters including a specialized ectosomal skeleton, large extra-axial megascleres, a more-or-less radial arrangement of the extra-axial skeleton that protrudes a long way through the surface, and well developed axial and extra-axial differentiation. The major differences between these genera are, a) the spicules in the axial skeleton (long sinuous styles, strongyles or anisoxeas in *Ceratopsion*; short, stout oxeas in *Thrinacophora*), b) the organization of the spicules in the axial skeleton (densely packed in *Ceratopsion*; criss-cross in *Thrinacophora*), c) the presence of raphides and trichodragmata (absent in *Ceratopsion*; present in *Thrinacophora*).

Table 1.—Spicule dimensions for *Ceratopsion crustosum*. Measurements (in μm) are ranges of 25 spicules (or the number indicated in brackets) with means ± standard deviation in parentheses.

	Holotype USNM 42808	
Strongyles		
Length	570–1300	(842.8 ± 156.3)
Width	10–25	(17.2 ± 4.5)
Oxeas I		
Length	150–290	(224.8 ± 36.5)
Width	2.5–7.5	(6.7 ± 1.4)
Oxeas II		
Length	42.5–100	(75.4 ± 12.9)
Width	2.5–2.5	(2.5 ± 0.0)
Trichodragmata		
Length	70–200	(154.6 ± 38.0) [13]
Width	5–10	(7.1 ± 1.4) [13]
	Paratype USNM 42809	
Strongyles		
Length	670–1175	(948.4 ± 129.9)
Width	10–20	(15.6 ± 3.8)
Oxeas I		
Length	170–330	(260.4 ± 38.0)
Width	5–10	(7.3 ± 1.4)
Oxeas II		
Length	40–100	(72.4 ± 15.7)
Width	2.5–2.5	(2.5 ± 0.0)
Trichodragmata		
Length	17.5–250	(138.6 ± 70.3)
Width	5–17.5	(9.2 ± 2.7)

The new species was compared with *Ceratopsion ramosum* Thiele, 1898 (fragment of type specimen from Berlin Museum No. 957) and *Thrinacophora funiformis* Ridley & Dendy, 1886 and found to be similar in structure to both of them. The presence of raphides and trichodragmata in *Thrinacophora funiformis* and the new species, but absent in *C. ramosum* and other species of *Ceratopsion,* could be a reason to allocate the new species to *Thrinacophora.* However, the new species lacks the reticulate axis

of short, stout choanosomal oxeas, and criss-cross of axial spicules typical of *Thrinacophora.* As the presence of raphides and trichodragmata is considered less important (because of wide-spread occurrence in many families and genera of the Demospongiae) than the architecture of the skeleton the new species is placed within *Ceratopsion.* The definition of *Ceratopsion* given by Hooper (1991) should therefore be emended to include species with raphides and trichodragmata.

Ceratopsion crustosum represents the first species of *Ceratopsion* recorded in Atlantic waters. Other species of *Ceratopsion* (see Hooper 1991:1328) have been reported from Japan, Indonesia, New Zealand, Australia, South Africa, and the Mediterranean.

Etymology.—From the Latin *crusta,* crust referring to the dermal crust of oxeas that forms the ectosome.

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